

A study of some of the factors affecting the success
of artificial pollination and subsequent fertilisation
in Theobroma cacao.

Introduction.

This experiment on I.C.S.1, was carried out to investigate the success of pollinating flowers on different dates, at different times of day, and when occupying different positions on the trees. The pollinations were performed by hand and therefore the experiment can only yield information of the potentials for successful fertilisation by the natural agent, and not necessarily what occurs in the field.

The success obtained in pollinations may vary from day to day through the changed physiological status of the tree, resulting from a changing environment. If the variation is a major factor it will be reflected in the number of pods formed from pollinations on a series of days. Considering the physiological aspect again, it was decided that any tree may show an individual interaction with the environment, and that this would only be calculable if several trees were used on any particular date.

Some authors¹ have stated that unless pollinations are carried out in the early morning, there is a dropping off in the percentage set. Several things will be concerned notably, the time of anthesis, the dehiscence of the anthers, the receptivity of the stigma and the physiology of the flower. The necessity for early morning pollination has been abundantly shown for other tropical crops.² To see if this obtained for cacao, three times of day were included as factors in the pollination programme.

As a fourth factor it was decided that the position of the flower on the tree may affect the readiness with which it sets fruit. It has been observed that the parts of a tree show a varying capacity to bring pods through to maturity. Those that develop on the main trunk are less liable to cherville wilt than those produced distally. This differential relation between pods set, and position on tree may begin at the very

inception of the fruit. Position on tree was therefore included
as a factor in the ^{ti}stastical lay-out of the experiment.